Fabrication Techniques for Septum Magnets at the APS*

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Abstract

The design, construction, and installation of pulsed septum magnets for particle accelerators presents many challenges for the magnet engineer. Issues associated with magnet core structure design, component alignment, weldment design, and electrical insulation choices are among those requiring careful attention. The designs of the six septum magnets required for the APS facility have evolved since operation began in 1996. Improvements in the designs have provided better injection/extraction performance parameters and extended the machine reliability to meet the requirements of a world-class, third-generation synchrotron radiation facility. Details of the techniques used to address issues involved in producing septum magnets at the APS are described here to aid magnet engineers in the fabrication of future septum magnets.

Keywords: septum, magnet

Presentation: Poster

* Work supported by U.S. Department of Energy, Office of Basic Energy Sciences under contract number W-31-109-ENG-38.